

**JP8264842**

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## **SIDE SURFACE LIGHT EMITTING DEVICE**

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Applicant(s): ROHM CO LTD  
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Priority Number(s):  
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### **Abstract**

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**PURPOSE:** To provide a side surface light emitting device having an electrode shape, which improves the connectivity of the device.

**CONSTITUTION:** In a side surface light-emitting device having a chip base 1, which is mounted with a light-emitting element, has a recessed part 2 and consists of resin, and one group of electrodes 3 and 3, which are respectively formed on the side surfaces of this base 1 and are connected with the element, the electrodes 3 provided extendedly from the recessed part 2 are respectively provided around the surface in the vicinities of both end surfaces of the base 1. Moreover, the electrodes 3 provided around are respectively formed on a packaging surface of the base 1 and the side surfaces adjacent to the packaging surface of the base 1.

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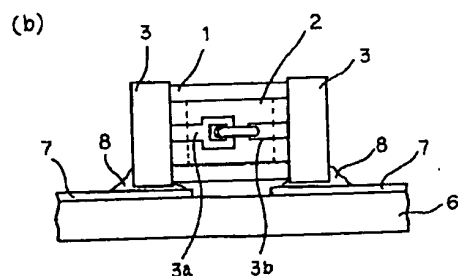
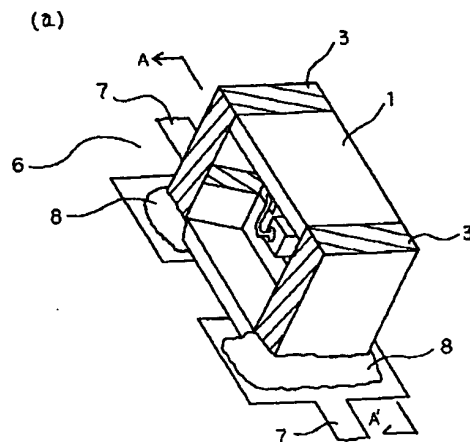
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(54) 【発明の名称】 側面発光装置

(57) 【要約】

【目的】 側面発光装置の接続性が向上する電極形状を有する側面発光装置を提供すること。

【構成】 発光素子4が実装された凹部2を有する樹脂よりのチップ状の基台1と、この基台1の表面に形成され且つ発光素子4と接続される一組の電極3、3と、を有する側面発光装置であって、凹部2から延設されたそれぞれの電極3が、基台1の両端面近傍表面に周設されていることを特徴とする。更に、周設されたそれぞれの電極3が基台1の実装面とそれに隣接する面に形成されていることを特徴とする。



## 【特許請求の範囲】

【請求項1】 発光素子が実装された凹部を有する樹脂よりなるチップ状の基台と、この基台の表面に形成され且つ前記発光素子と接続される一組の電極と、を有する側面発光装置であって、前記凹部から延設されたそれぞれの電極が、前記基台の両端面近傍表面に周設されていることを特徴とする側面発光装置。

【請求項2】 請求項1に記載の側面発光装置であって、周設されたそれぞれの電極が基台の実装面とそれに隣接する面に形成されていることを特徴とする側面発光装置。

## 【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、側面発光装置に関し、詳しくは側面発光装置の電極形状に関する。

【0002】

【従来の技術】従来のチップ型の側面発光装置は、図4の斜視図に示されるように、直方体状の基台10の一面に凹部11が形成されている。この凹部11が形成される面とその裏面、そして、基台10の端面に一組の電極12、12が形成されている。この電極12、12には先端部12a、12bが基台10の凹部11の底面で対向するように延出されている。この先端部12aに発光素子13が電氣的に接続されるように実装されており、この発光素子13の表面電極（図示せず）と電極の先端部12bがボンディングワイヤ14にて電氣的に接続されている。そして、発光素子13とボンディングワイヤ14を保護する透光性の樹脂（図示せず）が凹部11に充填されて構成される側面発光装置は、公開実用新案公報の平成4年第65465号（以下実開平4-65465号公報と称す）に記載されている。

【0003】

【発明が解決しようとする課題】このような側面発光装置が実装される状態は、図5の説明図に示すように側面発光装置の凹部11の形成された面が側面に位置するように、基台10の電極の形成されていない面を実装面として電子機器等の基板15上の配線パターン16に向けて搭載し、半田17で側面発光装置の各電極12、12を接続している。

【0004】近年、側面発光装置を含む電子部品の外形寸法の小型化が進んでおり、それにともない側面発光装置の電極も微細な寸法になってきている。しかし、上述の実開平4-65465号公報に示されるような従来の側面発光装置では、側面発光装置の小さな端面の電極と側面発光装置の使用される電子機器等の基板の配線パターンが線で接触する状態で半田で固定されている。

【0005】そのため、側面発光装置の基板への固着力が充分でなく、電子機器等の組み立て時に基板を治具等

で固定した際に、側面発光装置に外力が加わると基板から脱落してしまうという問題点があった。本発明は、上述の問題点に鑑み、側面発光装置の接続性が向上する電極形状を有する側面発光装置を提供することを目的とする。

【0006】

【課題を解決するための手段】上述の問題点を解決するために、本願の請求項1に記載した発明は、側面発光装置であって、発光素子が実装された凹部を有する樹脂よりなるチップ状の基台と、この基台の表面に形成され、且つ前記発光素子と接続される一組の電極とを有する側面発光装置であって、前記凹部から延設されたそれぞれの電極が、前記基台の両端面近傍表面に周設されていることを特徴とする。

【0007】一方、本願の請求項2に記載した発明は、請求項1に記載した側面発光装置であって、周設されたそれぞれの電極が基台の実装面とそれに隣接する面に形成されていることを特徴とする。

【0008】

【発明の作用及び効果】側面発光装置の電極を基台の両端面近傍表面に周設したことで、側面発光装置が実装される基板の配線パターンと側面発光装置の電極が面で接触する状態となる。それにより、側面発光装置の電極と基板の配線パターンを少量の半田で効率良く接続することが可能になるだけでなく、電気導電性も良好になるという効果を有する。

【0009】そして、側面発光装置の周設された電極が基台の実装面とそれに隣接する面に形成されていることで、側面発光装置の電極とそれが実装される基板の配線パターンの間に半田を介在させて接続することが可能となるだけでなく、配線パターンと対向する実装面に隣接する面にも半田が回り込んで接続される。それにより、側面発光装置の電極と基板の配線パターンとの接続性がより向上し、側面発光装置の基板への固着力が一層強固になるだけでなく、電気導電性もより良好になるという効果を有する。

【0010】

【実施例】以下本発明の側面発光装置を図面を用いて説明する。図1は本発明の側面発光装置の製造プロセスを示す説明図で、液晶ポリマー等を成分とする反射型の樹脂とメッキ可能な樹脂の2種類を2重成形した直方体状の基台1は、一面に後述の発光素子が実装される凹部2を有するように成形する（図1（a））。この基台1は端面近傍の凹部2の形成されている面とそれに連なる両側面、及び凹部2の一部表面と凹部2の形成された面の裏面にメッキ可能な樹脂が露出するように成形する。

【0011】基台1の触媒処理されたメッキ可能な樹脂の表面に、表層に金を有する層よりなる一組の帯状の電極3、3をメッキにより基台1の両端面近傍表面に周設する（図1（b））。この電極3、3には基台1の凹部

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2の底面に対向するように先端部3a、3bを延出している。先端部3aに電氣的・機械的に接続されるように発光素子4は導電性ペースト（図示せず）を用いて実装している。この発光素子4の表面電極（図示せず）と電極の先端部3bを金よりなるボンディングワイヤ5にて電氣的に接続している（図1（c））。この発光素子4とボンディングワイヤ5を保護する為にエポキシ系の透光性樹脂（図示せず）を凹部2に充填して側面発光装置は形成されている。尚、この実施例の側面発光装置の実装面は1a及びその対面である1bのどちらでも良い。

【0012】次に、本発明の側面発光装置（図1（c）の1bを実装面とした時）の実装状態を図2（a）を用いて説明すると、側面発光装置の凹部2の形成されている面が側面となる向きで、ガラスーエポキシ樹脂よりなる基板6の一組の配線パターン7に半田8を用いて実装されている。この状態のA-A'断面を図2（b）を用いて説明すると、側面発光装置の電極3は底面、即ち実装面にも形成されており、基板6の配線パターン7と半田8を介して電氣的・機械的に接続されている。

【0013】前述の実施例において、側面発光装置の電極3は端面近傍の凹部の形成されている一面とそれに連なる両側面、及び凹部の一部表面と凹部の形成された一面の裏面に帯状に周設されているが、それらの面に連なる端面に形成されても良く、基台の実装面とそれに隣接する面だけに形成してもよい。更に、本発明の他の実施例を図3の斜視図を用いて説明すると、図3（a）及び図3（b）共に前述の実施例と同様の材料を用いて、同様のプロセスで凹部2の形成されている面と略直交する方向の面が少なくとも1面以上有するように、且つ電極3の一部が基台1の実装面に接する面に形成されるように製造されている。図3（a）の側面発光装置は基台1が略5角柱状に形成されており、この側面発光装置の実装面は凹部2が形成されている面と略直交する方向の面1a及び1bである。更に実装面に隣接する側面発光装置の1a'及び1b'を実装面とした場合には、発光方向を斜め上方向の側面発光も可能となる。そして、図3（b）の側面発光装置は基台1が略8角柱状に形成されており、この側面発光装置の実装面は同じく凹部2が形成されている面と略直交する方向の面1a及び1bである。更に実装面に隣接する側面発光装置の1a'及び1b'と、1a''及び1b''を実装面とした場合には、発光方向を斜め上及び斜め下方向の側面発光も可能となる。

【0014】上述の実施例において、実装面に電極3が

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形成されていることにより、基板6の配線パターン7と半田8を介して側面発光装置の電極3が接続される。それにより、従来よりも電極3と配線パターン7の導通を充分確保することができるだけでなく、半田8が電極3及び配線パターン7と合金を形成するので側面発光装置の基板に対する固着力を向上させることができる。

【0015】又、液晶ポリマー等を成分とする反射型の樹脂とメッキ可能な樹脂の2種類の樹脂を2ショットモールド法により成形した基台1を用いたことにより、電極3の形成にメッキ法を用いることが可能になり、電極3とそれに連なり凹部2の底面に対向する3a、3bを同時に形成することができる。それにより側面発光装置の製造を大幅に変更することなく、容易に製造することが可能になる。

【0016】更に、側面発光装置の電極3の一部が基台1の実装面に接する面に形成されていることにより、基台1を凹部2の形成されている面と略直交する方向の面が少なくとも1面以上有する多角柱状に成形した場合、実装面に隣接する面にも電極が形成されているので、実装面に隣接する面を実装面とする事が可能となる。それにより、従来では側面発光装置の実装される基板に略平行な方向の発光しかできなかったのが、1つの側面発光装置で2方向以上の側面方向に発光することが可能となる。

【0017】尚、本発明の側面発光装置は上述の実施例に記載の形状及び材料、方法等に特に限定されるものではない。

【図面の簡単な説明】

【図1】本発明の一実施例の側面発光装置の製造プロセスを示す説明図

【図2】本発明の一実施例の側面発光装置の実装状態を示す説明図

【図3】本発明の他の実施例を示す斜視図

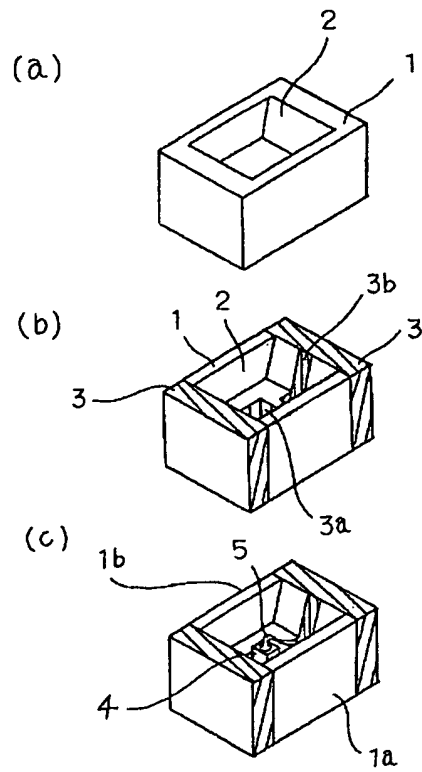
【図4】従来の側面発光装置を示す斜視図

【図5】従来の側面発光装置の実装状態を示す説明図

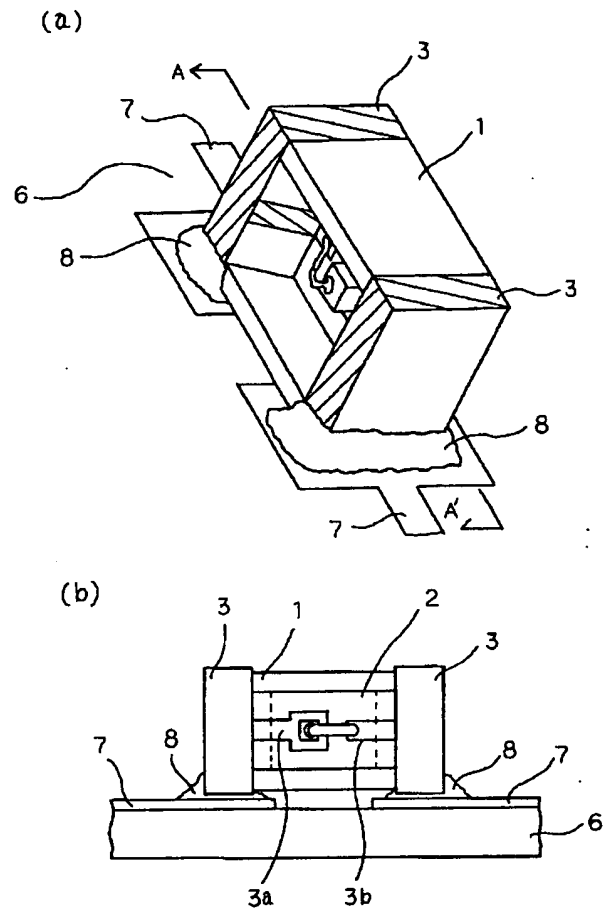
【符号の説明】

- 1・・・基台
- 2・・・凹部
- 3・・・電極
- 4・・・発光装置
- 5・・・ボンディングワイヤ
- 6・・・基板
- 7・・・配線パターン
- 8・・・半田

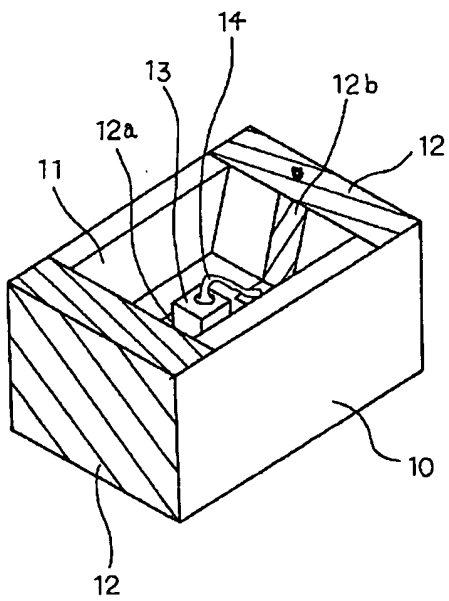
【図1】



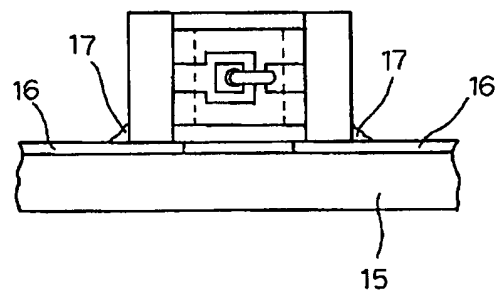
【図2】



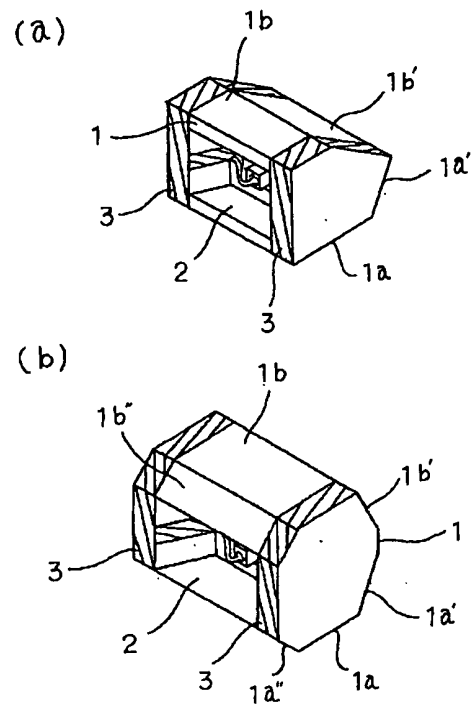
【図4】



【図5】



【図3】



## PATENT ABSTRACTS OF JAPAN

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(21)Application number : 07-067299 (71)Applicant : ROHM CO LTD

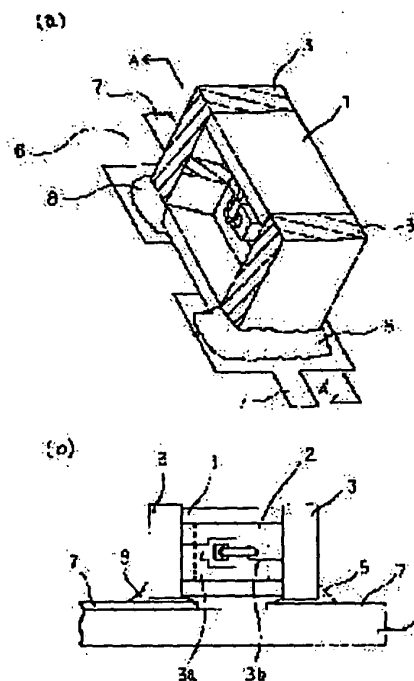
(22)Date of filing : 27.03.1995 (72)Inventor : FUJII TAKEHIRO  
ISHINAGA HIROMOTO

## (54) SIDE SURFACE LIGHT EMITTING DEVICE

(57)Abstract:

PURPOSE: To provide a side surface light emitting device having an electrode shape, which improves the connectivity of the device.

CONSTITUTION: In a side surface light-emitting device having a chip base 1, which is mounted with a light-emitting element, has a recessed part 2 and consists of resin, and one group of electrodes 3 and 3, which are respectively formed on the side surfaces of this base 1 and are connected with the element, the electrodes 3 provided extendedly from the recessed part 2 are respectively provided around the surface in the vicinities of both end surfaces of the base 1. Moreover, the electrodes 3 provided around are respectively formed on a packaging surface of the base 1 and the side surfaces adjacent to the packaging surface of the base 1.



## LEGAL STATUS

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rejection or application converted  
registration]

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[Patent number]

[Date of registration]

[Number of appeal against examiner's  
decision of rejection]

[Date of requesting appeal against  
examiner's decision of rejection]

[Date of extinction of right]

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**CLAIMS**

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[Claim(s)]

[Claim 1] Side luminescence equipment with which it is side luminescence equipment which has the electrode of the lot which is formed in the pedestal of the letter of a chip which consists of a resin which has the crevice where the light emitting device was mounted, and the front face of this pedestal, and is connected with the aforementioned light emitting device, and each electrode installed from the aforementioned crevice is characterized by being attached around the front face near the ends side of the aforementioned pedestal.

[Claim 2] Side luminescence equipment which is side luminescence equipment according to claim 1, and is characterized by being formed in the field where each attached electrode adjoins the component side of a pedestal, and it.

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[Translation done.]

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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention relates to the electrode configuration of side luminescence equipment in detail about side luminescence equipment.

[0002]

[Description of the Prior Art] The crevice 11 is formed in the whole surface of the rectangular parallelepiped-like pedestal 10 as conventional chip type side luminescence equipment is shown in the perspective diagram of drawing 4 . The electrodes 12 and 12 of a lot are formed in the field in which this crevice 11 is formed, its rear face, and the end face of a pedestal 10. It has extended so that Points 12a and 12b may counter these electrodes 12 and 12 on the base of the crevice 11 of a pedestal 10. It is mounted so that a light emitting device 13 may be electrically connected to this point 12a, and point 12b of the surface electrode (not shown) of this light emitting device 13 and an electrode is electrically connected by the bonding wire 14. And the side luminescence equipment with which a crevice 11 is filled up with the resin (not shown) of a translucency which protects a light emitting device 13 and a bonding wire 14, and it is constituted is indicated by No. 65465 of a open utility model official report (JP,4-65465,U is called below) in Heisei 4.

[0003]

[Problem(s) to be Solved by the Invention] The state where such side luminescence equipment was mounted was carried towards the circuit pattern 16 on the substrates 15, such as electronic equipment, by having made into the component side the field in which the electrode of a pedestal 10 is not formed, and has connected each electrodes 12 and 12 of side luminescence equipment with solder 17 so that the field in which the crevice 11 of side luminescence equipment was formed as shown in explanatory drawing of drawing 5 may be located in the side.

[0004] In recent years, the miniaturization of the dimension of the electronic parts containing side luminescence equipment is progressing, and the electrode of side luminescence equipment is also becoming a detailed size in connection with it. However, in conventional side luminescence equipment as shown in above-mentioned JP,4-65465,U, the electrode of the small end face of side luminescence equipment and the circuit pattern of substrates, such as electronic equipment by

which side luminescence equipment is used, are being fixed with solder in the state of contacting by the line.

[0005] Therefore, the fixing force to the substrate of side luminescence equipment was not enough, and when a substrate was fixed with a fixture etc. at the time of assemblies, such as electronic equipment, and external force joined side luminescence equipment, there was a trouble of dropping out of a substrate. this invention aims at offering the side luminescence equipment which has the electrode configuration whose connectability of side luminescence equipment improves in view of an above-mentioned trouble.

[0006]

[Means for Solving the Problem] In order to solve an above-mentioned trouble, invention indicated to the claim 1 of this application The pedestal of the letter of a chip which is side luminescence equipment and consists of a resin which has the crevice where the light emitting device was mounted, It is side luminescence equipment which has the electrode of the lot which is formed in the front face of this pedestal, and is connected with the aforementioned light emitting device, and each electrode installed from the aforementioned crevice is characterized by being attached around the front face near the ends side of the aforementioned pedestal.

[0007] On the other hand, invention indicated to the claim 2 of this application is side luminescence equipment indicated to the claim 1, and is characterized by being formed in the field where each attached electrode adjoins the component side of a pedestal, and it.

[0008]

[Function and Effect of the Invention] By having attached the electrode of side luminescence equipment around the front face near the ends side of a pedestal, the circuit pattern of a substrate and the electrode of side luminescence equipment in which side luminescence equipment is mounted will be in the state of contacting in a field. It not only becomes possible to connect the circuit pattern of a substrate with the electrode of side luminescence equipment efficiently with a small amount of solder by that cause, but it has the effect that electric conductivity also becomes good.

[0009] And solder turns and it not only becomes possible to make solder intervene between the electrode of side luminescence equipment, and the circuit pattern of the substrate in which it is mounted, and to connect by being formed in the field where the electrode around which side luminescence equipment was attached adjoins the component side of a pedestal, and it, but is connected to the field which adjoins a circuit pattern and the component side which counters. Thereby, the connectability of the electrode of side luminescence equipment and the circuit pattern of a substrate improves more, and has the effect of the fixing force to the substrate of side luminescence equipment not only becoming still firmer, but becoming electric conductivity nearby fitness.

[0010]

[Example] The side luminescence equipment of this invention is explained using a drawing below. Drawing 1 is explanatory drawing showing the manufacture process of the side luminescence equipment of this invention, and it fabricates the pedestal 1 of the shape of a rectangular parallelepiped which carried out double fabrication

of the two kinds, the reflected type resin and the resin which can be plated which uses a liquid crystal polymer etc. as a component, so that it may have the crevice 2 where the below-mentioned light emitting device is mounted in the whole surface ( drawing 1 (a) ). In part, this pedestal 1 is fabricated so that the resin which can be plated at the rear face of the front face and the field in which the crevice 2 was formed of the both-sides side which stands in a row in the field in which the crevice 2 near the end face is formed, and it, and a crevice 2 may be exposed.

[0011] The band-like electrodes 3 and 3 of a lot which become a surface from the layer which has gold are attached around the front face of the resin with which catalyst processing of the pedestal 1 was carried out and which can be plated on the front face near the ends side of a pedestal 1 by plating ( drawing 1 (b) ). Points 3a and 3b are extended so that these electrodes 3 and 3 may be countered on the base of the crevice 2 of a pedestal 1. The light emitting device 4 is mounted using a conductive paste (not shown) so that it may connect with point 3a electrically and mechanically. Point 3b of the surface electrode (not shown) of this light emitting device 4 and an electrode is electrically connected by the bonding wire 5 which consists of gold ( drawing 1 (c) ). In order to protect this light emitting device 4 and bonding wire 5, a crevice 2 is filled up with the translucency resin (not shown) of an epoxy system, and side luminescence equipment is formed. In addition, whichever of 1b which is 1a and its confrontation is sufficient as the component side of the side luminescence equipment of this example.

[0012] Next, solder 8 is used for the circuit pattern 7 of the lot of the substrate 6 which consists of a glass-epoxy resin with the sense from which the field in which the crevice 2 of side luminescence equipment is formed will turn into the side if the mounting state of the side luminescence equipment (when 1b of drawing 1 (c) is made into a component side) of this invention is explained using drawing 2 (a), and it is mounted. If the A-A' cross section of this state is explained using drawing 2 (b), the electrode 3 of side luminescence equipment is formed in the base, i.e., a component side, and is connected electrically and mechanically through the circuit pattern 7 and solder 8 of a substrate 6.

[0013] In the above-mentioned example, in part, although the electrode 3 of side luminescence equipment is attached around the rear face of the front face and the whole surface in which the crevice was formed of the both-sides side which stands in a row in the whole surface in which the crevice near the end face is formed, and it, and a crevice band-like, it may be formed in the end face which stands in a row in those fields, and may be formed only in the field which adjoins the component side of a pedestal, and it. Furthermore, if other examples of this invention are explained using the perspective diagram of drawing 3, it is manufactured so that the 1st [ at least / or more ] page of the field of the direction which carries out an abbreviation rectangular cross with the field in which the crevice 2 is formed in the same process may have using the material as the above-mentioned example with same drawing 3 (a) and drawing 3 (b), and so that it may be formed in the field where a part of electrode 3 touches the component side of a pedestal 1. As for the side luminescence equipment of drawing 3 (a), the pedestal 1 is fabricated by abbreviation 5 prismatic, and the component sides of this side luminescence equipment are the fields 1a and 1b of the direction which carries out an

abbreviation rectangular cross with the field in which the crevice 2 is formed. Furthermore, when 1a' and 1b' of side luminescence equipment which adjoin a component side are made into a component side, slanting above side luminescence is also attained in the luminescence direction. And the side luminescence equipment of drawing 3 (b) is fabricated by abbreviation 8 prismatic, and its pedestals 1 are the fields 1a and 1b of the direction as for which the component side of this side luminescence equipment carries out an abbreviation rectangular cross with the field in which the crevice 2 is similarly formed. furthermore — a component side — adjoining — the side — luminescence — equipment — one — a — ' — and — one — b — ' — one — a — " — and — one — b — " — a component side — \*\* — having carried out — a case — \*\*\*\* — the luminescence direction — a slant top and slanting down side luminescence is also possible — becoming .

[0014] In an above-mentioned example, the electrode 3 of side luminescence equipment is connected through the circuit pattern 7 and solder 8 of a substrate 6 by forming the electrode 3 in the component side. Thereby, the flow of an electrode 3 and a circuit pattern 7 is not only securable enough conventionally, but since solder 8 forms an electrode 3 and a circuit pattern 7, and an alloy, it can raise the fixing force over the substrate of side luminescence equipment.

[0015] Moreover, by having used the pedestal 1 which fabricated two kinds of resins, a reflected type resin and the resin which can be plated, which use a liquid crystal polymer etc. as a component by the two-shot mould method, it becomes possible to use plating for formation of an electrode 3, and 3a and 3b which stand in a row in an electrode 3 and it, and counter on the base of a crevice 2 can be formed simultaneously. It becomes possible to manufacture easily, without this changing manufacture of side luminescence equipment sharply.

[0016] Furthermore, since the electrode is formed also in the field which adjoins a component side when a pedestal 1 is fabricated in the shape of [ which the 1st / at least / or more / page of the field of the direction which carries out an abbreviation rectangular cross with the field in which the crevice 2 is formed has ] a multiple pillar by being formed in the field where a part of electrode 3 of side luminescence equipment touches the component side of a pedestal 1, it becomes possible to make into a component side the field which adjoins a component side. the substrate in which side luminescence equipment is mounted by the former by that cause — abbreviation — it becomes possible [ emitting light in the direction of the side more than a 2-way with one side luminescence equipment ] only for luminescence of an parallel direction to have been completed

[0017] In addition, the side luminescence equipment of this invention is not limited to a configuration given in an above-mentioned example and material, especially a method, etc.

**\* NOTICES \***

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**TECHNICAL FIELD**

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[Industrial Application] this invention relates to the electrode configuration of side luminescence equipment in detail about side luminescence equipment.

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**PRIOR ART**

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[Description of the Prior Art] The crevice 11 is formed in the whole surface of the rectangular parallelepiped-like pedestal 10 as conventional chip type side luminescence equipment is shown in the perspective diagram of drawing 4 . The electrodes 12 and 12 of a lot are formed in the field in which this crevice 11 is formed, its rear face, and the end face of a pedestal 10. It has extended so that Points 12a and 12b may counter these electrodes 12 and 12 on the base of the crevice 11 of a pedestal 10. It is mounted so that a light emitting device 13 may be electrically connected to this point 12a, and point 12b of the surface electrode (not shown) of this light emitting device 13 and an electrode is electrically connected by the bonding wire 14. And the side luminescence equipment with which a crevice 11 is filled up with the resin (not shown) of a translucency which protects a light emitting device 13 and a bonding wire 14, and it is constituted is indicated by No. 65465 of a open utility model official report (JP,4-65465,U is called below) in Heisei 4.

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**EFFECT OF THE INVENTION**

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[Function and Effect of the Invention] By having attached the electrode of side luminescence equipment around the front face near the ends side of a pedestal, the circuit pattern of a substrate and the electrode of side luminescence equipment in which side luminescence equipment is mounted will be in the state of contacting in a field. It not only becomes possible to connect the circuit pattern of a substrate with the electrode of side luminescence equipment efficiently with a small amount of solder by that cause, but it has the effect that electric conductivity also becomes good.

[0009] And solder turns and it not only becomes possible to make solder intervene between the electrode of side luminescence equipment, and the circuit pattern of the substrate in which it is mounted, and to connect by being formed in the field where the electrode around which side luminescence equipment was attached adjoins the component side of a pedestal, and it, but is connected to the field which adjoins a circuit pattern and the component side which counters. Thereby, the connectability of the electrode of side luminescence equipment and the circuit pattern of a substrate improves more, and has the effect the fixing force to the substrate of side luminescence equipment not only becomes still firmer, but that electric conductivity nearby becomes good.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] The state where such side luminescence equipment was mounted was carried towards the circuit pattern 16 on the substrates 15, such as electronic equipment, by having made into the component side the field in which the electrode of a pedestal 10 is not formed, and has connected each electrodes 12 and 12 of side luminescence equipment with solder 17 so that the field in which the crevice 11 of side luminescence equipment was formed as shown in explanatory drawing of drawing 5 may be located in the side.

[0004] In recent years, the miniaturization of the dimension of the electronic parts containing side luminescence equipment is progressing, and the electrode of side luminescence equipment is also becoming a detailed size in connection with it. However, in conventional side luminescence equipment as shown in above-mentioned JP,4-65465,U, the electrode of the small end face of side luminescence equipment and the circuit pattern of substrates, such as electronic equipment by which side luminescence equipment is used, are being fixed with solder in the state of contacting by the line.

[0005] Therefore, the fixing force to the substrate of side luminescence equipment was not enough, and when a substrate was fixed with a fixture etc. at the time of assemblies, such as electronic equipment, and external force joined side luminescence equipment, there was a trouble of dropping out of a substrate. this invention aims at offering the side luminescence equipment which has the electrode configuration whose connectability of side luminescence equipment improves in view of an above-mentioned trouble.

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**MEANS**

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[Means for Solving the Problem] In order to solve an above-mentioned trouble, invention indicated to the claim 1 of this application The pedestal of the letter of a chip which is side luminescence equipment and consists of a resin which has the crevice where the light emitting device was mounted, It is side luminescence equipment which has the electrode of the lot which is formed in the front face of this pedestal, and is connected with the aforementioned light emitting device, and each electrode installed from the aforementioned crevice is characterized by being attached around the front face near the ends side of the aforementioned pedestal. [0007] On the other hand, invention indicated to the claim 2 of this application is side luminescence equipment indicated to the claim 1, and is characterized by being formed in the field where each attached electrode adjoins the component side of a pedestal, and it.

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**EXAMPLE**

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[Example] The side luminescence equipment of this invention is explained using a drawing below. Drawing 1 is explanatory drawing showing the manufacture process of the side luminescence equipment of this invention, and it fabricates the pedestal 1 of the shape of a rectangular parallelepiped which carried out double fabrication of the two kinds, the reflected type resin and the resin which can be plated which uses a liquid crystal polymer etc. as a component, so that it may have the crevice 2 where the below-mentioned light emitting device is mounted in the whole surface ( drawing 1 (a)). In part, this pedestal 1 is fabricated so that the resin which can be plated at the rear face of the front face and the field in which the crevice 2 was formed of the both-sides side which stands in a row in the field in which the crevice 2 near the end face is formed, and it, and a crevice 2 may be exposed.

[0011] The band-like electrodes 3 and 3 of a lot which become a surface from the layer which has gold are attached around the front face of the resin with which catalyst processing of the pedestal 1 was carried out and which can be plated on the front face near the ends side of a pedestal 1 by plating ( drawing 1 (b)). Points 3a and 3b are extended so that these electrodes 3 and 3 may be countered on the base of the crevice 2 of a pedestal 1. The light emitting device 4 is mounted using a conductive paste (not shown) so that it may connect with point 3a electrically and mechanically. Point 3b of the surface electrode (not shown) of this light emitting device 4 and an electrode is electrically connected by the bonding wire 5 which consists of gold ( drawing 1 (c)). In order to protect this light emitting device 4 and bonding wire 5, a crevice 2 is filled up with the translucency resin (not shown) of an epoxy system, and side luminescence equipment is formed. In addition, whichever of 1b which is 1a and its confrontation is sufficient as the component side of the side luminescence equipment of this example.

[0012] Next, solder 8 is used for the circuit pattern 7 of the lot of the substrate 6 which consists of a glass-epoxy resin with the sense from which the field in which the crevice 2 of side luminescence equipment is formed will turn into the side if the mounting state of the side luminescence equipment (when 1b of drawing 1 (c) is made into a component side) of this invention is explained using drawing 2 (a), and it is mounted. If the A-A' cross section of this state is explained using drawing 2 (b), the electrode 3 of side luminescence equipment is formed in the base, i.e., a component side, and is connected electrically and mechanically through the circuit pattern 7 and solder 8 of a substrate 6.

[0013] In the above-mentioned example, in part, although the electrode 3 of side luminescence equipment is attached around the rear face of the front face and the whole surface in which the crevice was formed of the both-sides side which stands in a row in the whole surface in which the crevice near the end face is formed, and it, and a crevice band-like, it may be formed in the end face which stands in a row in those fields, and may be formed only in the field which adjoins the component side of a pedestal, and it. Furthermore, if other examples of this invention are explained using the perspective diagram of drawing 3, it is manufactured so that the 1st [ at least / or more ] page of the field of the direction which carries out an abbreviation rectangular cross with the field in which the crevice 2 is formed in the same process may have using the material as the above-mentioned example with same drawing 3 (a) and drawing 3 (b), and so that it may be formed in the field where a part of electrode 3 touches the component side of a pedestal 1. As for the side luminescence equipment of drawing 3 (a), the pedestal 1 is fabricated by abbreviation 5 prismatic, and the component sides of this side luminescence equipment are the fields 1a and 1b of the direction which carries out an abbreviation rectangular cross with the field in which the crevice 2 is formed. Furthermore, when 1a' and 1b' of side luminescence equipment which adjoin a component side are made into a component side, slanting above side luminescence is also attained in the luminescence direction. And the side luminescence equipment of drawing 3 (b) is fabricated by abbreviation 8 prismatic, and its pedestals 1 are the fields 1a and 1b of the direction as for which the component side of this side luminescence equipment carries out an abbreviation rectangular cross with the field in which the crevice 2 is similarly formed. furthermore -- a component side -- adjoining -- the side -- luminescence -- equipment -- one -- a -- ' -- and -- one -- b -- ' -- one -- a -- " -- and -- one -- b -- " -- a component side -- \*\* -- having carried out -- a case -- \*\*\*\* -- the luminescence direction -- a slant top and slanting down side luminescence is also possible -- becoming .

[0014] In an above-mentioned example, the electrode 3 of side luminescence equipment is connected through the circuit pattern 7 and solder 8 of a substrate 6 by forming the electrode 3 in the component side. Thereby, the flow of an electrode 3 and a circuit pattern 7 is not only securable enough conventionally, but since solder 8 forms an electrode 3 and a circuit pattern 7, and an alloy, it can raise the fixing force over the substrate of side luminescence equipment.

[0015] Moreover, by having used the pedestal 1 which fabricated two kinds of resins, a reflected type resin and the resin which can be plated, which use a liquid crystal polymer etc. as a component by the two-shot mould method, it becomes possible to use plating for formation of an electrode 3, and 3a and 3b which stand in a row in an electrode 3 and it, and counter on the base of a crevice 2 can be formed simultaneously. It becomes possible to manufacture easily, without this changing manufacture of side luminescence equipment sharply.

[0016] Furthermore, since the electrode is formed also in the field which adjoins a component side when a pedestal 1 is fabricated in the shape of [ which the 1st / at least / or more / page of the field of the direction which carries out an abbreviation rectangular cross with the field in which the crevice 2 is formed has ]

a multiple pillar by being formed in the field where a part of electrode 3 of side luminescence equipment touches the component side of a pedestal 1, it becomes possible to make into a component side the field which adjoins a component side. the substrate in which side luminescence equipment is mounted by the former by that cause -- abbreviation -- it becomes possible [ emitting light in the direction of the side more than a 2-way with one side luminescence equipment ] only for luminescence of an parallel direction to have been completed  
[0017] In addition, the side luminescence equipment of this invention is not limited to a configuration given in an above-mentioned example and material, especially a method, etc.

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**DESCRIPTION OF DRAWINGS**

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**[Brief Description of the Drawings]**

**[Drawing 1]** Explanatory drawing showing the manufacture process of the side luminescence equipment of one example of this invention

**[Drawing 2]** Explanatory drawing showing the mounting state of the side luminescence equipment of one example of this invention

**[Drawing 3]** The perspective diagram showing other examples of this invention

**[Drawing 4]** The perspective diagram showing conventional side luminescence equipment

**[Drawing 5]** Explanatory drawing showing the mounting state of conventional side luminescence equipment

**[Description of Notations]**

- 1 .... Pedestal
- 2 .... Crevice
- 3 .... Electrode
- 4 .... Luminescence equipment
- 5 .... Bonding wire
- 6 .... Substrate
- 7 .... Circuit pattern
- 8 .... Solder

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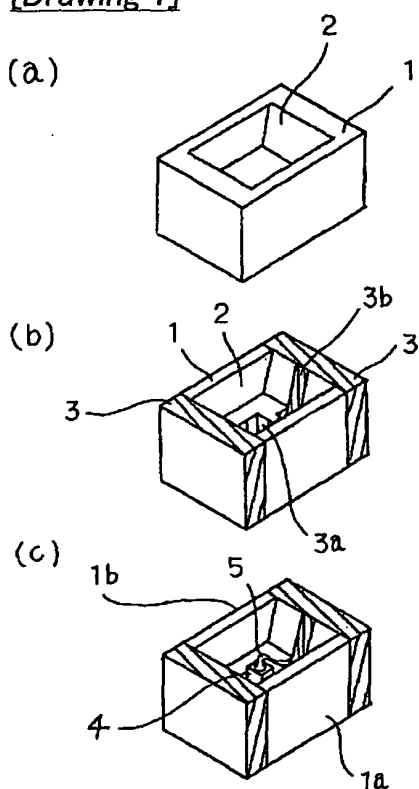
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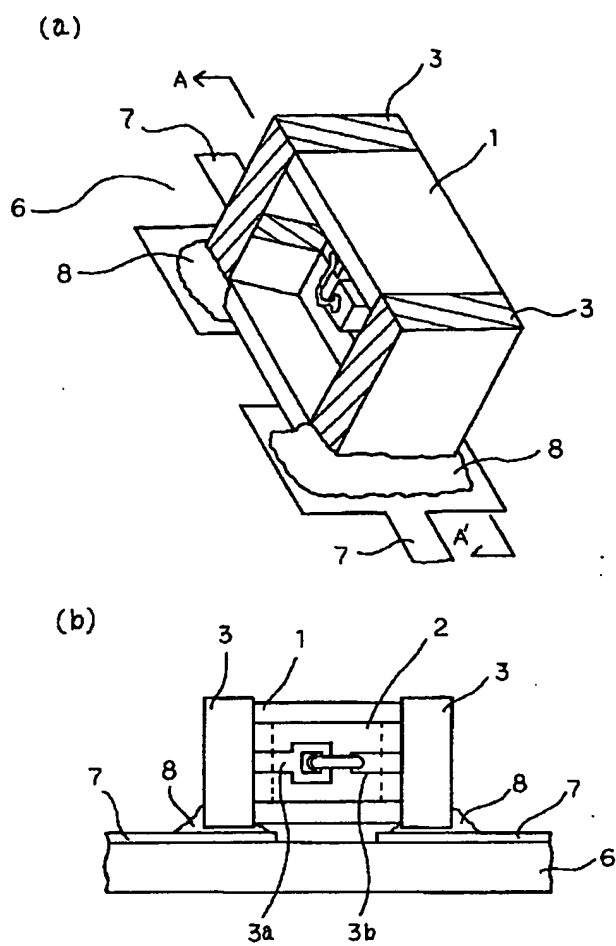
DRAWINGS

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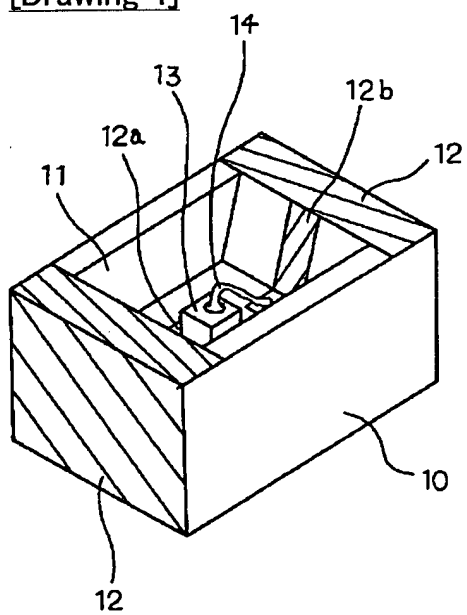
[Drawing 1]



[Drawing 2]

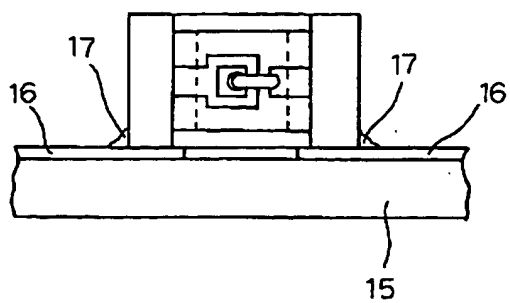


[Drawing 4]



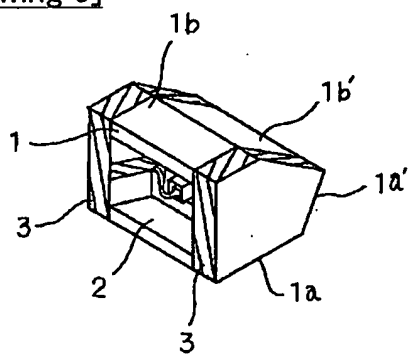
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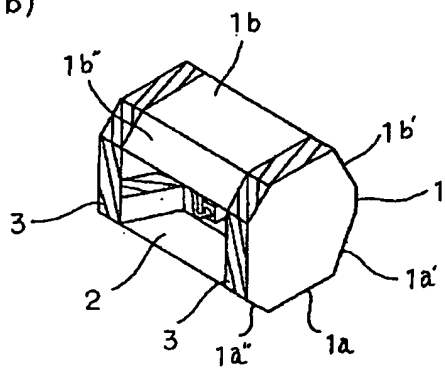


[Drawing 3]

(a)



(b)



[Translation done.]